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world, had anything happened to interfere in any way with the work that the Blue Hill Observatory has been doing so admirably since its foundation. The present volume of observations contains the usual data for the year and, in addition, summaries for the lustrum and decade, with a discussion of the annual and diurnal periods, by Clayton. A number of interesting points are brought out, among them the grouping of thunderstorms around certain dates; the occurrence of maxima in the frequency and amount of snowfall at intervals of twenty or thirty days; of the greatest snowfall in February, and of a minimum of rainfall in June, with a maximum in October.

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CURRENT NOTES ON ANTHROPOLOGY.

THE SO-CALLED 'BOW-PULLERS' of ANTIQUITY.

THIS is the title of a carefully prepared essay by Professor Edward S. Morse, in the *Essex Institute Bulletin*, Vol. XXVI., the essential facts of which have been copied in *Globus*, Bd. LXXI., No. 10, and other foreign journals. The subject discussed is the purpose of certain objects of bronze or iron found in Greek, Roman and Etruscan tombs. These objects are two connected rings of the metal about seven centimeters in full length, the space between them being about two centimeters, from which space three or four knobs, projections or spines, of irregular height, arise.

Professor Morse proves that these objects can be neither bow-pullers, spear throwers, curbs, bits, caltrops, nor anything else which has been proposed by classical archaeologists; but what they are, he says, after seven years' study, he cannot suggest, nor do the European editors who have republished his article offer an explanation.

I take, therefore, some special pleasure in solving this enigma, and in identifying this curious and puzzling object. It is without doubt the Greek *myrmex* (μύρμηξ) which, in pugilistic encounters, was strapped or chained on the hand over the leathern cestus. This identification answers every condition of form, material, decoration and use mentioned by Professor Morse. I shall shortly publish an article giving the Greek and Latin authorities at length, confirming this opinion.

FAIRYLAND.

IN his presidential address, published in *Folk-lore* for March, Mr. Alfred Nutt discusses the origin of the fairy-lore which has been such a prominent feature in English literature and rustic narrative. He brings together many reasons for attributing it to a Celtic source. It is, in fact, a survival of the belief in the pre-Christian, pagan gods of the Celtic tribes. These have been best remembered in Ireland, where they are still spoken of as the *tuatha de Danann*—the folk of the goddess Danu; and they are to this day considered the occupants of the fairy hillocks.

Mr. Nutt does not explain why the fairies were considered very little beings, as this is not mentioned in the earliest Irish myths. I may suggest that there are reasons for believing that the goddess Danu was the moon (from the O. I. verb, *daon*, to arise, to ascend; and compare Harley, *Moon-lore*, p. 121), and her followers, or folk, the little twinkling stars; whence by an easy step of personification they were transformed into the tiny fairy folk.

RECENT ETRUSCOLOGY.

THE 'Etruscan problem' is one of perennial interest, and now that the Metropolitan Museum of New York and that of the University of Pennsylvania have acquired large and valuable collections from ancient Etruria, the affinities of its mysterious in-

habitants have an increased attraction for American students.

In the February number of the *Journal of the Anthropological Institute* the eminent antiquary, Dr. Oscar Montelius, offers some new views on the subject. He identifies the Etruscans of Italy with the Tyrrhenians and the Pelasgians, and the earliest Etruscan culture with the Mycenaean. Both, he believes, emerged from Asia Minor, the Etruscans reaching Italy by sea about 1050 B. C., bringing with them their peculiar alphabet. The 'Tursha' of the Egyptian inscriptions of the 13th century B. C., he argues, were the Tyrrhenians.

In the discussion which followed, some of these views were opposed by Mr. Arthur Evans and Mr. J. L. Myres, the former maintaining that the 'root elements' of the Mycenaean civilization were European and not Asiatic; and the latter referring with approval to the theory that the Etruscans belonged to the Hamitic stock of North Africa, advanced on linguistic grounds by myself.

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NOTES ON INORGANIC CHEMISTRY.

A RECENT number of *Nature* (March 11th) contains an interesting review, by T. K. Rose, of the extraction of gold by chemical methods; much of the gold in ores is in a state of very fine division, the particles being often less than one thousandth of an inch in diameter, and sometimes less than one twelve thousandth. Such particles are much more readily dissolved by chemical means than by mercury. In sulfid ores, too, mercury is an unsatisfactory solvent. Such ores have until lately been worked by the chlorination process, which is now nearly fifty years old. The sulfids must, however, be very completely roasted, as the chlorin has a greater preference for sulfids than for the gold. When alkaline earths are pres-

ent, salt must be added in the roasting. This however occasions, save in the improved furnaces, a loss of chlorid of gold by volatilization. The ore is generally treated with chlorin water in large vats or in revolving barrels under pressure. The plant at Mount Morgan, Queensland, is the largest in the world, 1500 tons of ore being treated at a cost of \$4.50 per ton, about \$25 in gold being recovered for each ton. The gold is best precipitated from the chlorin solution by hydrogen sulfid, though iron sulfate or charcoal in boiling solution may be used. On account of the expense of roasting and, the non-recovery of any silver in the ore, the chlorination process is being gradually superseded by the cyanid process, which, while hardly recovering the gold as completely as the former, can be used with sulfid ores directly, and which recovers also any silver present. It has been long known that potassium cyanid in dilute solution dissolves gold, especially in the presence of air, with the formation of potassium aurocyanid, $K Au (CN)_2$, and this reaction is used practically in the process introduced by MacArthur and the Forrests. The action of the cyanid is most rapid in one-fourth per cent. solution, but at the best it is slow, and Sulman and Teed propose to hasten it by the addition of cyanogen bromid. The gold is precipitated either by zinc shavings, or, less commonly, by electro-deposition with iron cathodes and anodes of lead foil. The use of zinc is cheaper, but $1\frac{1}{2}$ to 2 dwts. of gold per ton of liquid remain unprecipitated, and the gold obtained is only about 700 fine. The electrolytic process is more complete and the bullion produced is very fine. At the Worcester mine, in the Transvaal, seventy tons of liquid are treated a day at an expenditure of five horse power, and 12,000 square feet of surface of lead are exposed.

The cyanid process enables low-grade